

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 2000

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

07 - Operational System Development

0207163F Advanced Medium Range Air-to-Air Missile 673777

| COST (\$ in Thousands) | FY 1999 Actual | FY 2000 Estimate | FY 2001 Estimate | FY 2002 Estimate | FY 2003 Estimate | FY 2004 Estimate | FY 2005 Estimate | Cost to Complete | Total Cost |
|----------------------------|-------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|------------|
| 673777 AMRAAM | 33,466 | 52,146 | 53,707 | 50,924 | 33,595 | 33,199 | 34,093 | 73,900 | 685,633 |
| Quantity of RDT&E Articles | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

(U) **A. Mission Description**

The Air Force and Navy developed the baseline Advanced Medium Range Air-to-Air Missile (AMRAAM) as a high performance, all weather missile to counter existing air vehicle threats operating at high or low altitude and having advanced Electronic Protection (EP) capabilities. The AMRAAM Pre-Planned Product Improvement (P3I) program provides for a continuing, Joint Air Force/Navy research and development program which enables AMRAAM to: (1) be compatible with advanced fighters, (2) enhance AMRAAM capability and operational flexibility against mid-1990's and beyond threats, (3) incorporate high payoff technology developments, and (4) investigate new variants and/or alternate missions which may use many baseline missile attributes. Currently, improvements under the P3I program include enhanced EP capabilities; improved weapon effectiveness through improved warhead, fuzing, and guidance; and increased kinematics via a new 5-inch stretched rocket motor. AMRAAM is a joint Air Force/Navy, Acquisition Category (ACAT) IC program with Air Force as lead service.

(U) **FY 1999 (\$ in Thousands)**

(U) \$27,184 Initiated P3I Phase 3 EP and guidance EMD
 (U) \$2,134 Continued mission support
 (U) \$4,148 Continued test and evaluation
 (U) \$33,466 Total

(U) **FY 2000 (\$ in Thousands)**

(U) \$50,303 Continue P3I Phase 3 improved seeker and advanced EP updates
 (U) \$1,769 Continue mission support
 (U) \$74 Continue test and evaluation
 (U) \$52,146 Total

(U) **FY 2001 (\$ in Thousands)**

(U) \$51,569 Continue P3I Phase 3 improved seeker and advanced EP updates
 (U) \$2,056 Continue mission support
 (U) \$82 Continue test and evaluation
 (U) \$53,707 Total

Project 673777

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07 - Operational System Development**0207163F Advanced Medium Range Air-to-Air Missile 673777**(U) **B. Budget Activity Justification**

This program is in budget activity 7 - Operational System Development, providing upgrades to the AIM-120C missile currently in production.

(U) **C. Program Change Summary (\$ in Thousands)**

| | <u>FY 1999</u> | <u>FY 2000</u> | <u>FY 2001</u> | <u>Total Cost</u> |
|---|----------------|----------------|----------------|-------------------|
| (U) Previous President's Budget (FY 2000 PBR) | 35,663 | 49,783 | 54,184 | 687,364 |
| (U) Appropriated Value | 36,078 | 52,783 | | |
| (U) Adjustments to Appropriated Value | | | | |
| a. Congressional/General Reductions | -415 | -22 | | |
| b. Small Business Innovative Research | -1,050 | | | |
| c. Omnibus or Other Above Threshold Reprogram | | -286 | | |
| d. Below Threshold Reprogram | -960 | | | |
| e. Rescissions | -187 | -329 | | |
| f. Other | | | | |
| (U) Adjustments to Budget Years Since FY 2000 PBR | | | -477 | |
| (U) Current Budget Submit/FY 2001 PBR | 33,466 | 52,146 | 53,707 | 685,633 |

Note: \$408K cancelled year bill included in FY99 Below Threshold Reprogramming total.

(U) **Significant Program Changes:**

None.

(U) **D. Other Program Funding Summary (\$ in Thousands)**

| | <u>FY 1999</u> | <u>FY 2000</u> | <u>FY 2001</u> | <u>FY 2002</u> | <u>FY 2003</u> | <u>FY 2004</u> | <u>FY 2005</u> | <u>Cost to</u> | <u>Total Cost</u> |
|---|----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-------------------|
| | <u>Actual</u> | <u>Estimate</u> | <u>Estimate</u> | <u>Estimate</u> | <u>Estimate</u> | <u>Estimate</u> | <u>Estimate</u> | <u>Complete</u> | |
| (U) Missile Procurement, Budget Activity #2, PE 0207163F, P-1 Line Item, AMRAAM | 89,714 | 89,670 | 98,075 | 115,384 | 109,564 | 110,846 | 112,426 | 241,780 | 6,814,123 |
| (U) Replenishment Spares, BP25 | 5,196 | 327 | 234 | 240 | 238 | 195 | 281 | 400 | 60,036 |
| (U) Initial Spares, BP26 | 725 | 192 | 138 | 119 | 124 | 123 | 123 | 400 | 63,653 |
| (U) Seek Eagle | 0 | 0 | 612 | 0 | 0 | 0 | 0 | 0 | 15,137 |

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BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

07 - Operational System Development

0207163F Advanced Medium Range Air-to-Air Missile 673777

(U) **E. Acquisition Strategy**

The AMRAAM Pre-Planned Product Improvement (P3I) program takes advantage of emerging technologies to update and expand the system capabilities to meet new user requirements. The Phase 1 missile, currently in production, allows carriage on the F-22 with clipped wings and fins as well as providing some software enhancements. The Phase 2 AIM-120 C4 missile adds a new warhead which increases lethality and the AIM-120 C5 missile has a +5 inch rocket motor for kinematic improvements. The first Phase 2 AIM-120 C4 missile was delivered in Aug of FY99. The AIM-120 C5 missiles will begin delivery in Jul of FY00. The Phase 3 missile is the first major upgrade to the seeker hardware and software to meet performance requirements for the 2003 time-period. A Cost Plus Award Fee EMD contract was awarded on 29 Oct 1999. This missile will begin deliveries in FY04. The second stage of Phase 3, beginning in FY04, will develop a new rocket motor to meet increased kinematic requirements.

(U) **F. Schedule Profile**

| | <u>FY 1999</u> | | | | <u>FY 2000</u> | | | | <u>FY 2001</u> | | | |
|---|----------------|---|---|---|----------------|---|---|---|----------------|---|---|---|
| | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 |
| (U) P3I Phase 2 Tape 7B Flt Test Comp | * | | | | | | | | | | | |
| (U) P3I Phase 2 Shortened Control Actuation System (SCAS) FCA | | * | | | | | | | | | | |
| (U) P3I Phase 3 Seeker EMD Contract Award | * | | | | | | | | | | | |
| (U) P3I Phase 3 Seeker System Design Review (SDR) | | * | | | | | | | | | | |
| (U) P3I Phase 3 Fuzing Functional Configuration Audit (FCA) | | | | | | | X | | | | | |
| (U) P3I Phase 3 Seeker Preliminary Design Review (PDR) | | | | | | | X | | | | | |
| (U) P3I Phase 3 Seeker Critical Design Review (CDR) | | | | | | | | | | | X | |

Schedule Changes:

The Fuzing FCA schedule slip was caused by an increase in the software development schedule associated with the Quadrant-sensing Target Detection Device (QTDD).

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| RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3) | | | | | | | | DATE February 2000 | | |
|---|--|--------------------|--|-------------------|---|----------------|--------------------|---------------------------|----------------|----------------|
| BUDGET ACTIVITY | | | | | PE NUMBER AND TITLE | | | | PROJECT | |
| 07 - Operational System Development | | | | | 0207163F Advanced Medium Range Air-to-Air Missile | | | | 673777 | |
| (U) <u>A. Project Cost Breakdown (\$ in Thousands)</u> | | | | | | | | | | |
| | | | | | FY 1999 | | FY 2000 | | FY 2001 | |
| (U) | a. Phase 3 EMD Improved Seeker and Advanced EP Updates | | | | 27,184 | | 50,303 | | 51,569 | |
| (U) | b. Gov Mission Support | | | | 2,134 | | 1,769 | | 2,056 | |
| (U) | c. Gov Test & Evaluation | | | | 4,148 | | 74 | | 82 | |
| (U) | Total | | | | 33,466 | | 52,146 | | 53,707 | |
| (U) <u>B. Budget Acquisition History and Planning Information (\$ in Thousands)</u> | | | | | | | | | | |
| (U) <u>Performing Organizations:</u> | | | | | | | | | | |
| <u>Contractor or</u> | | <u>Contract</u> | | | | | | | | |
| <u>Government</u> | | <u>Method/Type</u> | | <u>Award or</u> | <u>Performing</u> | <u>Project</u> | | | | |
| <u>Performing</u> | | <u>or Funding</u> | | <u>Obligation</u> | <u>Activity</u> | <u>Office</u> | <u>Total Prior</u> | <u>Budget</u> | <u>Budget</u> | <u>Budget</u> |
| <u>Activity</u> | | <u>Vehicle</u> | | <u>Date</u> | <u>EAC</u> | <u>EAC</u> | <u>to FY 1999</u> | <u>FY 1999</u> | <u>FY 2000</u> | <u>FY 2001</u> |
| <u>Product Development Organizations</u> | | | | | | | | | | |
| Misc. Contracts | | SS/FFP | | Annual | N/A | N/A | 8,470 | 232 | 1,308 | 855 |
| F08635-90-C-0201 Hughes | | SS/FFP | | Aug 90 | 5,200 | 5,200 | 5,200 | 0 | 0 | 0 |
| F08626-91-C-0034 Hughes | | SS/CPIF | | Mar 91 | 93,506 | 93,506 | 93,506 | 0 | 0 | 0 |
| F08626-93-C-0044 (Phase 2) Hughes | | SS/CPAF | | Jun 94 | 117,558 | 117,558 | 117,558 | 0 | 0 | 0 |
| Phase 3 Risk Reduction | | SS/CPAF | | Oct 95 | 24,484 | 24,484 | 24,484 | 0 | 0 | 0 |
| Phase 3 Improved Fuzing Capability | | SS/CPAF | | Oct 99 | 5,287 | 5,287 | 0 | 5,287 | 0 | 0 |
| Phase 3 Improved Seeker and Advanced EP | | SS/CPAF | | Oct 99 | 199,365 | 199,365 | 455 | 21,665 | 48,995 | 50,714 |
| EMD Contract Phase 3 Follow on | | SS/CPAF | | Oct 04 | 128,707 | 128,707 | 0 | 0 | 0 | 128,707 |
| *Note: Hughes became part of Raytheon Systems effective Dec 97 | | | | | | | | | | |
| <u>Support and Management Organizations</u> | | | | | | | | | | |
| COEA | | PO/MIPR | | Jan 94 | N/A | N/A | 3,358 | 0 | 0 | 0 |
| Contractor Support | | REO/PR | | Annual | N/A | N/A | 14,719 | 1,467 | 1,229 | 1,420 |
| JSP0 Operations | | PR/IMPAC | | Annual | N/A | N/A | 17,671 | 667 | 540 | 636 |
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|--|--------------------|-------------------|-----------------|---|--------------------|----------------|----------------|----------------|------------------|----------------|--|
| BUDGET ACTIVITY | | | | PE NUMBER AND TITLE | | | | | | PROJECT | |
| 07 - Operational System Development | | | | 0207163F Advanced Medium Range Air-to-Air Missile | | | | | | 673777 | |
| (U) <u>Performing Organizations Continued:</u> | | | | | | | | | | | |
| <u>Test and Evaluation Organizations</u> | | | | | | | | | | | |
| Government Test | REO/MIPR | Annual | N/A | N/A | 32,802 | 4,148 | 74 | 82 | 1,426 | 38,532 | |
| (U) <u>Government Furnished Property:</u> | | | | | | | | | | | |
| | <u>Contract</u> | | | | | | | | | | |
| | <u>Method/Type</u> | <u>Award or</u> | | | | | | | | | |
| <u>Item</u> | <u>or Funding</u> | <u>Obligation</u> | <u>Delivery</u> | | <u>Total Prior</u> | <u>Budget</u> | <u>Budget</u> | <u>Budget</u> | <u>Budget to</u> | <u>Total</u> | |
| <u>Description</u> | <u>Vehicle</u> | <u>Date</u> | <u>Date</u> | | <u>to FY 1999</u> | <u>FY 1999</u> | <u>FY 2000</u> | <u>FY 2001</u> | <u>Complete</u> | <u>Program</u> | |
| <u>Product Development Property</u> | | | | | | | | | | | |
| Not Applicable | | | | | | | | | | | |
| <u>Support and Management Property</u> | | | | | | | | | | | |
| Not Applicable | | | | | | | | | | | |
| <u>Test and Evaluation Property</u> | | | | | | | | | | | |
| TM/ECM Pods | REO/MIPR | Annual | | | 2,380 | 0 | 0 | 0 | 0 | 2,380 | |
| | | | | | <u>Total Prior</u> | <u>Budget</u> | <u>Budget</u> | <u>Budget</u> | <u>Budget to</u> | <u>Total</u> | |
| | | | | | <u>to FY 1999</u> | <u>FY 1999</u> | <u>FY 2000</u> | <u>FY 2001</u> | <u>Complete</u> | <u>Program</u> | |
| <u>Subtotals</u> | | | | | | | | | | | |
| Subtotal Product Development | | | | | 249,673 | 27,184 | 50,303 | 51,569 | 212,541 | 591,270 | |
| Subtotal Support and Management | | | | | 35,748 | 2,134 | 1,769 | 2,056 | 11,744 | 53,451 | |
| Subtotal Test and Evaluation | | | | | 35,182 | 4,148 | 74 | 82 | 1,426 | 40,912 | |
| Total Project | | | | | 320,603 | 33,466 | 52,146 | 53,707 | 225,711 | 685,633 | |

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